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(54) Title: METHODS OF USING BETA GLUCAN AS A RADIOPROTECTIVE AGENT

(57) Abstract: The invention relates to methods for treating and preventing radiation and/or chemotherapy related injury and/or afflictions, such as myelosuppression and decreased macrophage activity, by administering a prophylactically or therapeutically effective amount of particulate, bioavailable  $\beta(1,3; 1,6)$  glucan. The invention also relates to methods in which  $\beta(1,3; 1,6)$  glucan is provided in the form of whole glucan particles, microparticulate  $\beta$ -glucan particles or a combination thereof.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/25237

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A01N 43/04; A61K 31/715; C07H 1/00  
US CL : 514/54; 536/123.1, 123.12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 514/54; 536/123.1, 123.12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST, REGISTRY, CAPLUS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,504,079 A (JAMAS et al.) 02 April, 1996 (02.04.1996), whole document, especially column 2, lines 40-68).	1-15 and 17-19
Y	US 4,818,752 A (WILLIAMS et al.) 04 April 1989 (04.04.1989), whole document.	1-15 and 17-19
Y	US 5,783,569 A (JAMAS et al.) 21 July 1998 (21.07.1998), whole document, especially column 7, lines 42-67.	1-15 and 17-19

<input type="checkbox"/> Further documents are listed in the continuation of Box C.	<input type="checkbox"/> See patent family annex.
* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer James O. Wilson Telephone No. 703-308-0196

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/25237

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claim Nos.: 16  
because they relate to subject matter not required to be searched by this Authority, namely:  
Please See Continuation Sheet
2. ☐ Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such  
an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all  
searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite  
payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report  
covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is  
restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐  
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

PCT/US03/25237

**Box I Observations where certain claims were found unsearchable 1. because they relate to subject matter not required to be searched by this Authority, namely:**

Claim 16 is unsearchable because th claim is drawn to the "use of the glucan" wherein the "use" does not set forth any steps involved in the process, thus resulting in an improper definition of a process, i.e., results in a claim which is not a proper process claim.